TS100 Utility

Documentation

2/8/2021
Version 1.1R8

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TS100 Utility User's Manual

TS100/TS100A Features

TS100/TS100A can select following operating modes to meet your application.

Following table describes how the operation mode works:

TS100/TS100A Operating Mode

Operating Mode	Description	TS100	TS100A
Read	Use specified format to decode tag data. For example, use SGTIN-96 format to decode tag data. If it succeeded, it sends the decoded data in keystrokes.	✓	✓
Tag Analysis	Parse tag data to get its information. For example, manufacture, model and memory capacity. The tag memory data will also output to host.	✓	✓
Encode	Encode external bar code scanner data in specified format and then write to tags.		✓
Verify	Verify external bar code scanner data with encoded tag data. If it passed*, it sends the bar code data in keystrokes. *Verify is able to identify clone tags, so only tags were encoded with UDC or EAN/UPC+EAS under protection.		✓
Customized Read	Only read the tag which its EPC prefix is same to the one defined in Deactivate and Reactivate mode. The EPC prefix is select-able to be replaced by the one defined in Deactivate and Reactivate mode. Other functions are the same to Read mode.	✓	✓
Deactivate	Use Deactivated EPC prefix to replace EPC prefix of tags.	✓	✓
Reactivate	Use Reactivated EPC prefix to replace EPC prefix of tags.	✓	✓

Introduction

TS100Utility is a tool to set up TS100/TS100A, that is, you can modify TS100/TS100A settings with this program by USB. For further information please refer to [Using TS100Utility.](#)

System Requirements

TS100Utility is a Windows-based program, following is the requirements:

- Windows XP/7/10 (x86/x64)

- .NET Framework 4.0

Install the Program

The setup program is located at the **software\TS100Utility** folder of Disk5472. Execute **TS100UtilitySetup.msi** to install the program on your computer.
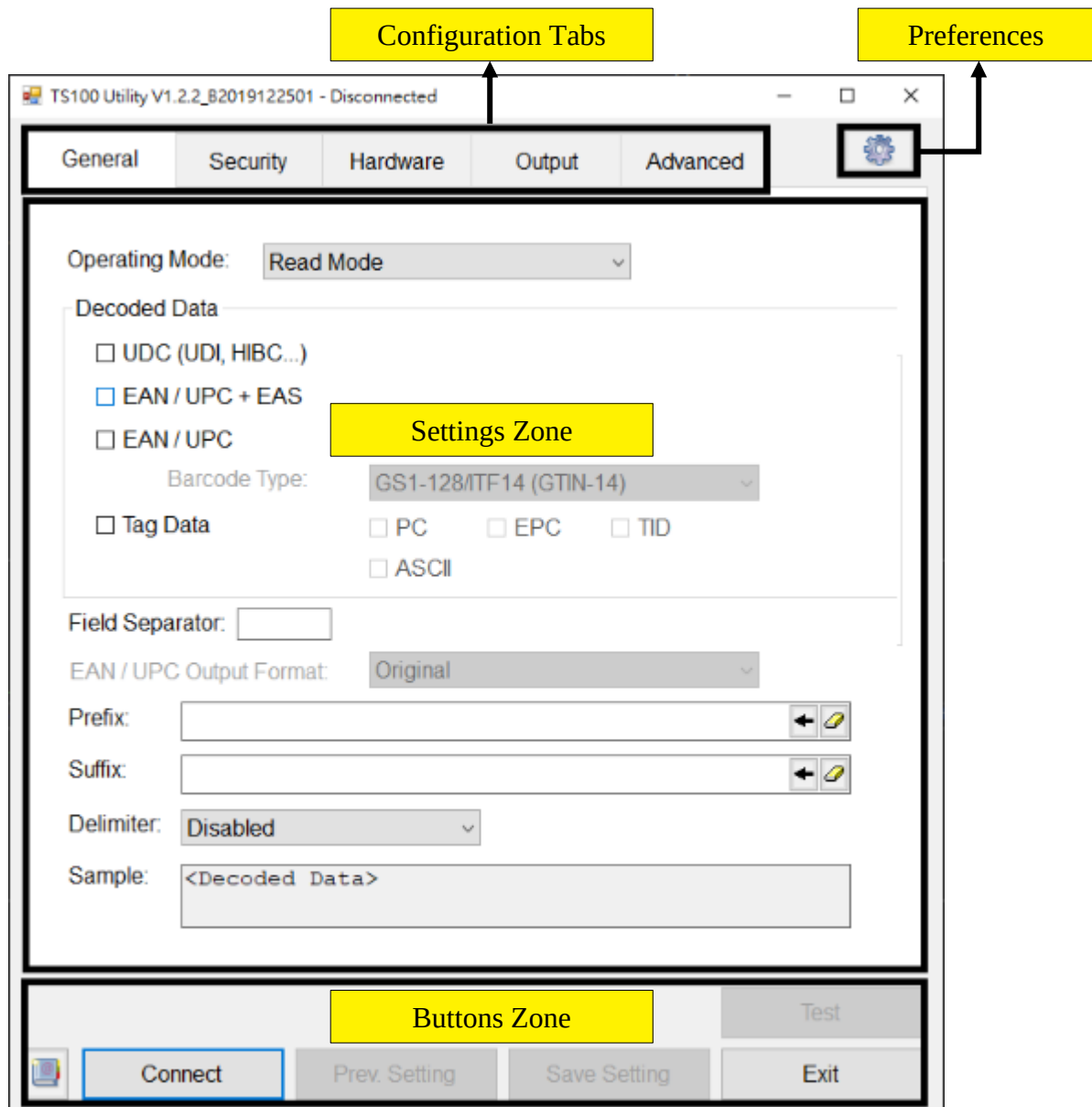
Start the Program

Follow below steps to execute **TS100Utility**:

1. On the taskbar, click **Start** button, and then select **GIGA-TMS** folder.

2. Click **TS100Utility** to configure TS100/TS100A.

Using TS100Utility

Explore the User Interface

The main window contains following elements:

1. **Configuration Tabs**

   Show different type of configuration. There is following tabs:

   ○ **General** Tab: Set up Operating Mode of TS100/TS100A. For further information, please refer to General Settings.

   ○ **Security** Tab: Enable/Disable tags protection. Enable to prevent tags from unauthorized modifications. For further information, please refer to Security Settings.

   ○ **Hardware** Tab: Modify hardware configurations. For further information, please refer to Hardware Settings.

   ○ **Output** Tab: Set up output interface and data type. For further information, please refer to Output Settings.

- **Advanced** Tab: Modify Inventory settings or/and output interface. For further information, please refer to Advanced Settings.

2. **Settings Zone**

   Show the details of specified configuration.

3. **Buttons Zone**

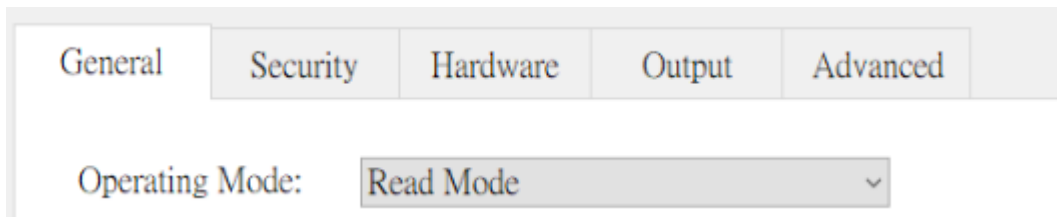   There is following buttons:

   - **Connect** button: Connect to TS100/TS100A.

   - **Read Settings** button: Retrieve settings from TS100/TS100A.

   - **Update** button: Update modified settings to TS100/TS100A.

   - **Exit** button: Disconnect with TS100/TS100A and close the program.

   - **Test** button: Update current settings to TS100/TS100A and test functions. For further information, please refer to Test Functions.

   - **Help** button: Open the TS100 user manual.

4. **Preferences**

   Modify software settings. For further information, please refer to Preferences Settings.

General Settings

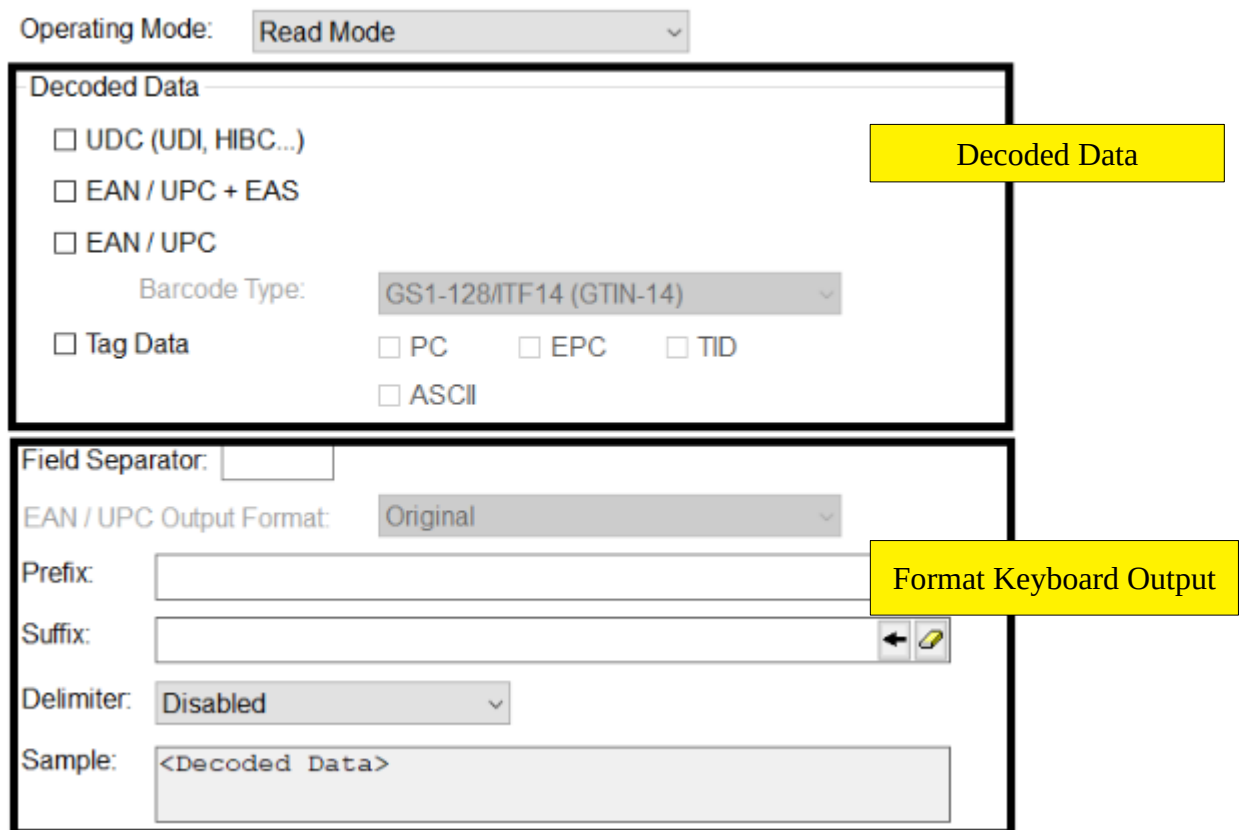In **General Tab**, you could change Operating Mode from the below list.

General	Security	Hardware	Output	Advanced

Operating Mode: | Read Mode |

Note: The list only shows supported Operating Modes by the connected device. For supported Operating Mode, please refer to TS100/TS100A Features.

After Operating Mode changed, it shows relative configuration as following.

- Read Mode

Operating Mode: | Read Mode |

Decoded Data
- ☐ UDC (UDI, HIBC...)
- ☐ EAN / UPC + EAS
- ☐ EAN / UPC
    - Barcode Type: | GS1-128/ITF14 (GTIN-14) |
- ☐ Tag Data   ☐ PC   ☐ EPC   ☐ TID
    ☐ ASCII

> Decoded Data

Field Separator: | |
EAN / UPC Output Format: | Original |
Prefix: | |
Suffix: | |
Delimiter: | Disabled |
Sample: | <Decoded Data> |

> Format Keyboard Output

1. **Decoded Data**: TS100/TS100A tries to decode tags in selected formats.
2. **Format Keyboard Output**: Set up field separator, prefix, suffix or/and delimiter. Sample field shows the result of output format. (Only apply in keyboard output.)
    - **Field Separator**: Use a char to split each parts of Tag Data (PC, EPC and TID).
    - **EAN/UPC Output Format:** Change EAN/UPC output to the selected format.
    - **Prefix**: Append an indicated string to the beginning of the output.
    - **Suffix**: Append an indicated string to the end of the output.
    - **Delimiter**: Append a delimiter to the end of the output.

NOTE: Prefix/Suffix accept visible keys and control keys, so you may use [⬅ ✐] *to delete text.*

- Deactivate Mode

Operating Mode: Deactivate Mode

EPC Prefix
Deactivate EPC Prefix (Hex): FFFF
Reactivate EPC Prefix (Hex): 3400

EPC Prefix

Normalize EPC Prefix (for Read)
Normalization: Disabled
Company Length: 6

Normalize EPC Prefix (for Read)

Prefix:
Suffix:
Delimiter: Disabled
Sample: <Decoded Data>

Format Keyboard Output

1. **EPC Prefix**: TS100/TS100A replaces *EPC Prefix* with *Deactivated EPC Prefix* of tags.
2. **Normalize EPC Prefix (for Read)**: TS100/TS100A outputs modified EPC after tags were deactivated. If Normalization is enabled, it outputs EPC with EAN/UPC prefix instead.
3. **Format Keyboard Output**: Set up prefix, suffix or/and delimiter. Sample field shows the result of output format. (Only apply in keyboard output.)

For more information, please refer to [Deactivate/Reactivate Tags](#).

- Reactivate Mode

1. **EPC Prefix:** TS100/TS100A replaces *EPC Prefix* with *Reactivated EPC Prefix* of tags.
2. **Normalize EPC Prefix (for Read)**: TS100/TS100A outputs modified EPC after tags were reactivated. If Normalization is enabled, it outputs EPC with EAN/UPC prefix instead.
3. **Format Keyboard Output**: Set up prefix, suffix or/and delimiter. Sample field shows the result of output format. (Only apply in keyboard output.)

For more information, please refer to Deactivate/Reactivate Tags.

- Tag Analysis Mode

   Nothing else need to set in this mode.

   NOTE: If you select this mode, Output Interface will set to "keyboard Emulation" only.

- Verify Mode

   Nothing else need to set in this mode.

- Encode Mode

Operating Mode: Encode Mode

Format
- ⦿ UDC   Universal Data Convert to EPC
- ○ EAN / UPC + EAS
- ○ EAN / UPC

Format: Specified a format to encode bar code data.

- Customized Read Mode

Operating Mode: Customized Read Mode

EPC Prefix

Deactivate EPC Prefix (Hex): FFFF

Reactivate EPC Prefix (Hex): 3400

EPC Prefix

Normalize EPC Prefix (for Read)

Normalization: Disabled

Company Length: 6

Normalize EPC Prefix

Prefix:

Suffix:
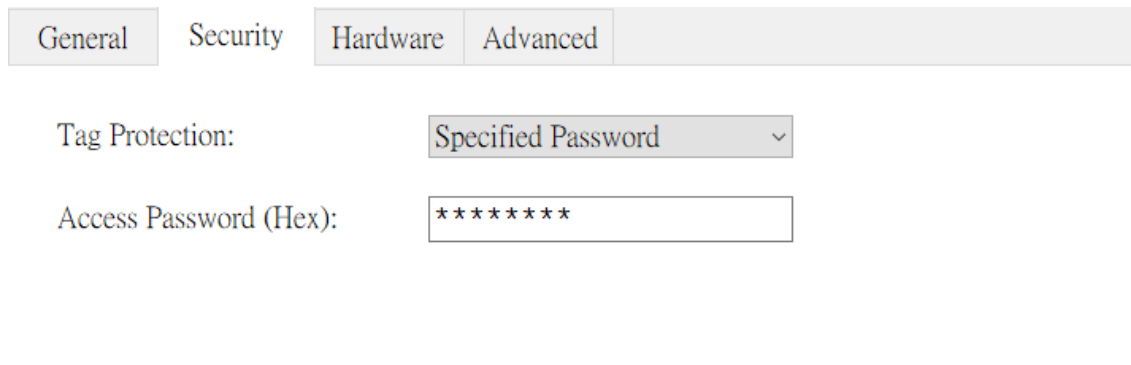
Delimiter: Disabled

Sample: `<Decoded Data>`

Format Keyboard Output

1. **EPC Prefix:** TS100/TS100A inventories the tags with *Deactivated EPC Prefix* or *Reactivated EPC Prefix*.
2. **Normalize EPC Prefix**: TS100/TS100A outputs EPC after tags were inventoried. If Normalization is enabled, it outputs EPC with EAN/UPC prefix instead.
3. **Format Keyboard Output**: Set up prefix, suffix or/and delimiter. Sample field shows the result of output format. (Only apply in keyboard output.)

Security Settings

In **Security Tab**, you could change the type of tag protection as below.

General	Security	Hardware	Advanced

Tag Protection: Specified Password ⌄

Access Password (Hex):   ✶✶✶✶✶✶✶✶

There are three types of protection as below:

1. **Disabled**: Disable tag protection.

2. **Dynamic Password**: The password is figured out by TS100/TS100A so that every tag has different password. (Also, every TS100/TS100A would generate different password with the same tag.)

3. **Specified Password**: Assign a static password to protect tags.

Hardware Settings

In **Hardware Tab**, you could change configurations as below.

General	Security	Hardware	Output	Advanced	⚙

Profile:	USA (902.75 ~ 927.25) ⌄
RF Power:	11 dbm ⌄
Sensitivity:	-74 dbm ⌄
Buzzer:	On (Alert once per tag) ⌄
USB Type:	HID + Keyboard ⌄

[Wi-Fi Settings]   [BLE Settings]

- **Profile**

    Identify the TS100/TS100A frequency range.

- **RF Power**

    Optimize inventory effect.

- **Sensitivity**

    - Affect how reader distinguishes signal and noise.

    - Affect Tag Access (Write, Read, Kill, Lock) behavior.

    - Does not affect reader inventory behavior.

    If sensitivity value is low (ex: -84dBm)

    - Reader is more sensitive to RF signals.

    - More likely to consider noise as a signal.

    - Easier to access tags with distance.

    - Sometimes make it more difficult to access tags that are too close.

    If sensitivity value is high (ex: -60dBm)

    - Reader is less sensitive to RF signals.

    - Less likely to consider noise as a signal.

- More difficult to access tags with distance.

- Easier to access tags that are too close.

Note: It is not necessarily better to increase Sensitivity because noises may be considered as a signal. In practice, the value with the highest probability of successful Tag Access will be selected according to the situation.

- **Buzzer**

   Switch the buzzer ON/OFF.

- **USB Type**

   Configure USB type as "HID + Keyboard" or "Virtual COM".

   NOTE: After you apply TS100 to "Virtual COM", You need to <u>install CDC driver</u> *if your OS is under Windows 10.*

- **(Wi-Fi Settings)**

   Configure Wi-Fi settings to enable the feature of connection with Wi-Fi.
   (It is invisible If the TS100/TS100A without Wi-Fi module.)

- **(BLE Settings)**

   Configure BLE settings to identify the device.
   (It is invisible If the TS100/TS100A without BLE module.)

Output Settings

In **Output Tab**, you could change configurations as below.

- **Data Type**

  Set data as **Decoded Data** or **Raw Data**. (It does not affect "Keyboard Emulation" data.)

- **TCP Server Address**

  Assign a TCP server address and port if you want to send data to a remote server. Also, you need to set Output Interface to "Auto" or select "TCP Server (Wi-Fi)".

- **Output Interface**
  - **Auto**: TS100/TS100A sends data to all the connected interfaces.

  - **User Defined:** Enable/Disable each output interface below.

    - **Keyboard Emulation**: TS100/TS100A prints data as a keyboard.

      - **Language**: Apply keyboard layout to TS100/TS100A to output prefix and suffix correctly.

        NOTE: Please make sure the bar code scanner output language is the same with it.

      - **(Type)**: TS100/TS100A as a USB keyboard or a BLE keyboard. (It is invisible If the TS100/TS100A without BLE module.)

        NOTE: If you set up USB Type to "Virtual COM", TS100/TS100A cannot be a USB keyboard.

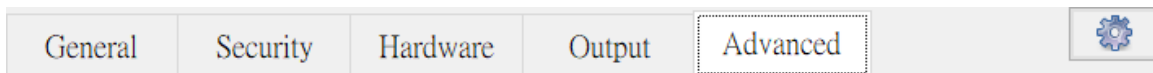   - **HID / Virtual COM**: TS100/TS100A sends data to the host by USB.

- **(BLE):** TS100/TS100A sends data through BLE. (It is invisible If the TS100/TS100A without BLE module.)

- **(TCP Client (Wi-Fi))**: TS100/TS100A sends data to the client devices which has connected to TS100/TS100A by TCP. (It is invisible If the TS100/TS100A without Wi-Fi module.)

- **(TCP Server (Wi-Fi))**: TS100/TS100A sends data to the remote server by TCP. (It is invisible If the TS100/TS100A without Wi-Fi module.)

  NOTE: Set up Remote Server IP and port at TCP Server Address.

Advanced Settings

In **Advanced Tab**, you could change configurations as below.

- **Lock Settings**

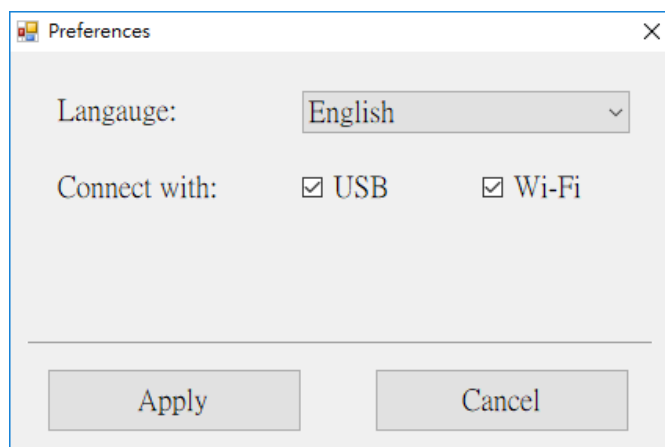 Enable to prevent from settings modification.

  NOTE: If TS100/TS100A is locked, you should place "Manager Card" on the TS100/TS100A to unlock it before you update settings. (Please refer to Unlock Settings*.)*

- **Inventory Tags**
  - **Time to remove**: Set how long TS100/TS100A could not inventory the tag which just appeared in the field, it thought the tag was removed.

  - **Repeat Interval**: Set how long to re-send output data for the same tag.

Preferences Settings

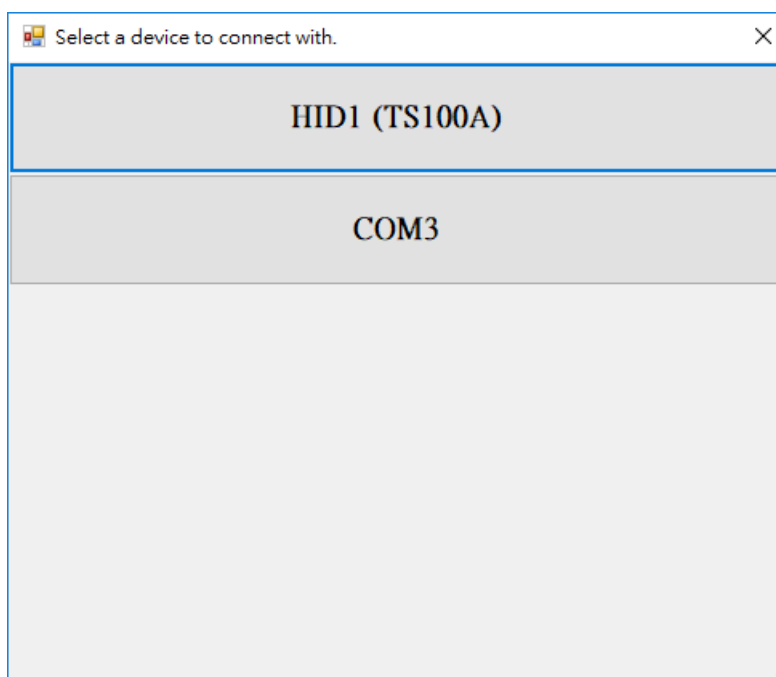Click **Preferences** button, you could change configurations as below.

- **Language**: Modify software UI language.

- **Connect With**: TS100Utility will search TS100/TS100A in the selected interfaces when you click **Connect** button in the main window.

- **Apply**: Apply modifications.

- **Cancel**: Cancel all modifications.

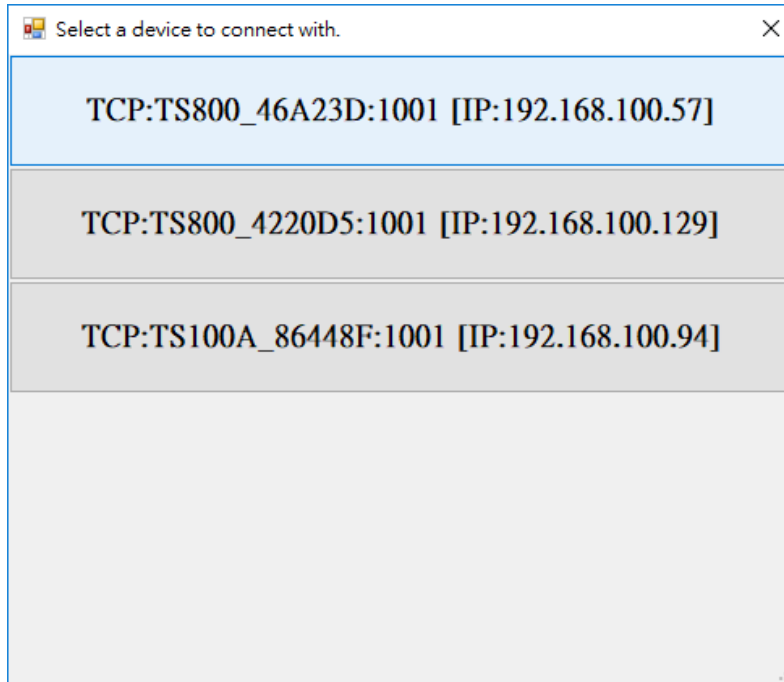**Tutorials**

Connect to TS100/TS100A

Connection by USB

1. Plug in TS100/TS100A to your computer by USB.

2. Select the USB checkbox in the Preferences Settings and click **Apply** button.

3. Click [Connect] button in the main window.

    3.1. If there is only one device could be found, it connects the device directly.

    3.2. If there is more than one device could be found, it shows a list as blow. Then you may select a target device to connect with.
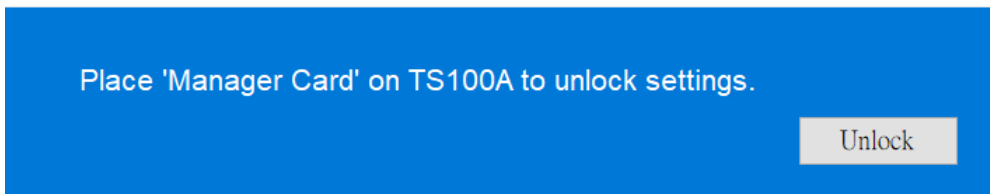

Connection by Wi-Fi

1. Make sure that Wi-Fi Settings is ready. (You may connect to TS100/TS100A by USB to set up Wi-Fi Settings.)

2. Select the Wi-Fi checkbox in the Preferences Settings and click **Apply** button.

3. Click [Connect] button in the main window.

    It shows a list as blow. Then you may select a target device to connect with.

Unlock Settings

If the device is locked, it alerts you to unlock settings as below.

Please follow below steps to unlock it.

1. Place **Manager Card** on TS100/TS100A.

2. Click button.

Update Settings
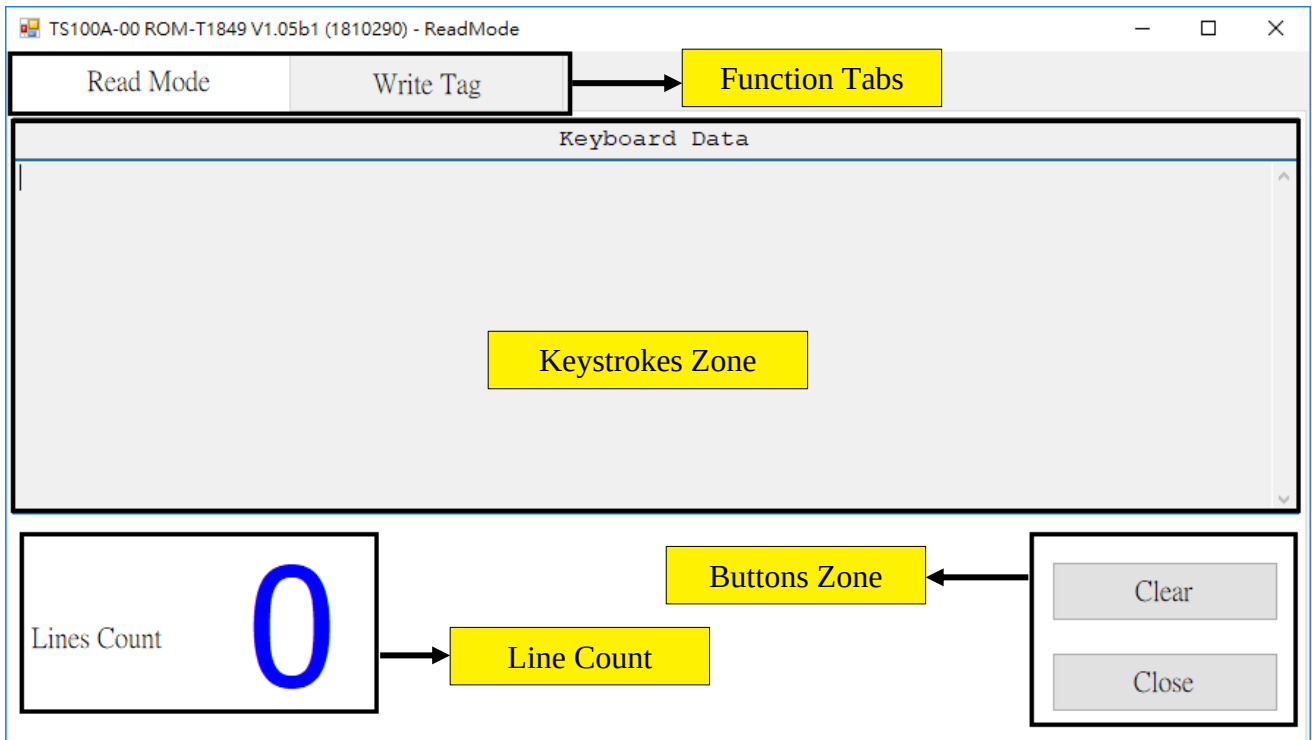
Please follow below steps to update settings to TS100/TS100A.

1. Connect to TS100/TS100A.

2. Modify settings to fit your need.

3. Click **Update** button to save the settings to TS100/TS100A.

4. Click **Exit** button to close the program.

Test Functions

You may test current settings whether it meets your expectation in this window.

After connecting with TS100/TS100A, click **Test** button, a window shows as below:

The window contains following elements:

1. **Function Tabs**: Test TS100/TS100A in current Operating Mode or write data to tags.

   - **Operating Mode** Tab: This tab depends on which mode TS100/TS100A is.

   - **Write Tag** Tab: Encode data to tags. Refer to Write Tag.

2. **Keystrokes Zone**: Show TS100/TS100A output data here.

3. **Buttons Zone**: There is following buttons:

   - **Clear** button: Clear data in Keystrokes Zone.

   - **Close** button: Close the window and then back to main window.

4. **Line Count**: Show how many lines in Keystrokes Zone.

Write Tags

You may write data to tags with a selected format.

Click **Test** button, and then click **Write Tag** tab on the new window. A window shows as below:

The window contains following elements:

1. **Data**: Enter data for the source of encoding.

2. **Encode Format**: Support following formats:

    - **UDC**: Data could be any character. (The format is defined by GIGA-TMS.)

    - **EAN/UPC + EAS**: Follow Gen2 standard to encode EAN/UPC. (Serial number is generated by TS100/TS100A.)

    - **EAN/UPC**: Follow Gen2 standard to encode EAN/UPC. (Assign a serial number by yourself.)

    - **EPC**: Write hexadecimal data to EPC without encoding.

    - **ASCII**: Encode data to ASCII.

3. **Write Tag**:

    - Assign an Access Password to unlock the tag if its EPC bank has been locked.

    - Click **Write** button to encode data in selected format and write to tags.

4. **Result**: History of writing tags.

- **Clear** button**:** Clear the result list.

- **Close** button: Close the window and then back to main window.

Step 1> Place a tag on the TS100/TS100A.

Step 2> Select an encode format.

Step 3> Enter data In Data field.

Step4> Press "Write" button to write the tag.

Deactivate/Reactivate Tags

Following below steps to deactivate and reactivate a tag.

1. Encoding a bar code data (*"01234565") to a t*ag in *"EAN/UPC"* format, so that

   EPC data = *"3038013481E8498000000001"*.

2. Setting:

   2.1.

   > **Operating Mode** = *Read Mode*
   >
   > **Decoded Data:** Select *"Tag Data" and "EPC".*

   Operating Mode: Read Mode

   Output Format: Decoded Data

   Decoded Data
   - ☐ UDC (UDI, HIBC...)
   - ☐ EAN / UPC + EAS
   - ☐ EAN / UPC
     - Barcode Type: GS1-128/ITF14 (GTIN-14)
   - ☑ Tag Data   ☐ PC   ☑ EPC   ☐ TID   ☐ ASCII

   2.2.

   > **Operating Mode** = *Deactivate Mode*
   >
   > **Deactivate EPC Prefix** = FFFF
   >
   > **Reactivate EPC Prefix** = 3400

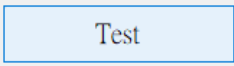   Operating Mode: Deactivate Mode

   EPC Prefix
   Deactivate EPC Prefix (Hex):   FFFF
   Reactivate EPC Prefix (Hex):   3400

   Normalize EPC Prefix (for Read)
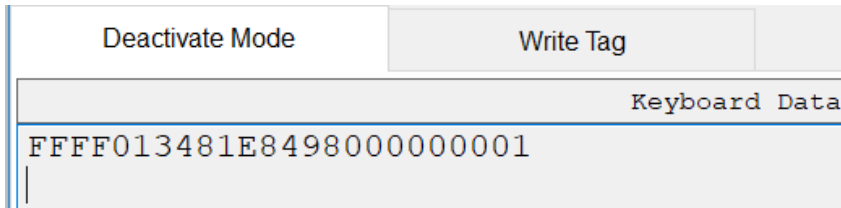   Normalization: Disabled
   Company Length: 6
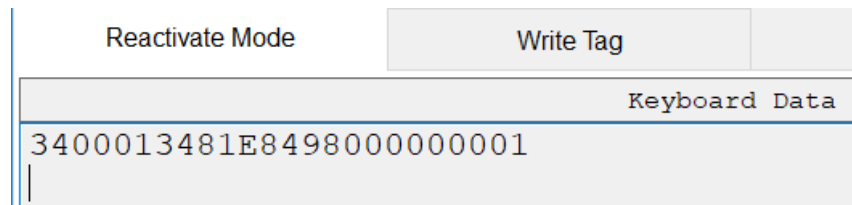
3. Clicking [Test] button.

4. Taking the tag on the TS100/TS100A. The EPC data will be changed as below.

   EPC data = "*FFFF013481E8498000000001*" (Now the tag has been deactivated.)

Deactivate Mode	Write Tag
	Keyboard Data
FFFF013481E8498000000001	

5. Setting up **Operating Mode** = *Reactivate Mode*, so that you're able to change EPC to

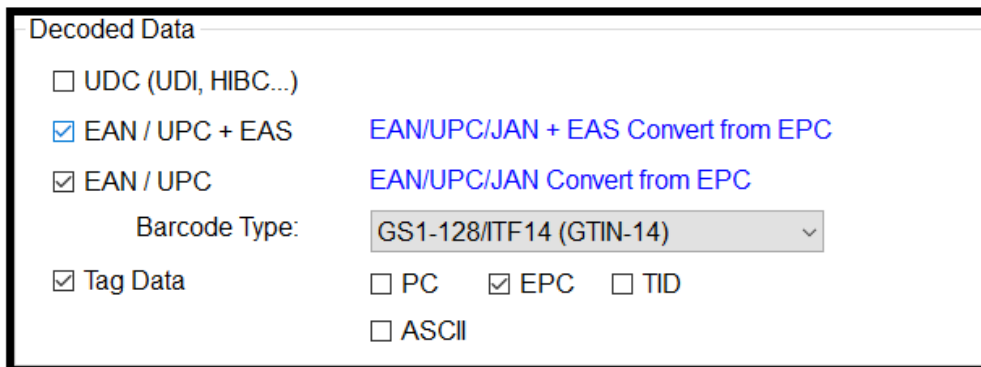   EPC data = "*3400013481E8498000000001*" (Now the tag has been reactivated.)

Reactivate Mode	Write Tag
	Keyboard Data
3400013481E8498000000001	

Note:

- When you deactivate/reactivate a tag, TS100/TS100A will output data. (Output data depend on what **Decoded Data** you selected in *Read Mode*.)

   Operating Mode: Read Mode

   Output Format: Decoded Data

   Decoded Data
   - ☐ UDC (UDI, HIBC...)
   - ☑ EAN / UPC + EAS   EAN/UPC/JAN + EAS Convert from EPC
   - ☑ EAN / UPC   EAN/UPC/JAN Convert from EPC
      - Barcode Type: GS1-128/ITF14 (GTIN-14)
   - ☑ Tag Data   ☐ PC   ☑ EPC   ☐ TID
      - ☐ ASCII

- Following below steps, you could get EAN/UPC data even if EPC prefix has been changed.
   (1) Setting:
      Operating Mode = *Read Mode*
      Decoded Data: Select *EAN/UPC.*

   (2) Setting:
      Operating Mode = *Deactivate Mode*
      Normalization = *EAN/UPC*

Operating Mode: Read Mode

Output Format: Decoded Data

Decoded Data

☐ UDC (UDI, HIBC...)

☐ EAN / UPC + EAS

☑ EAN / UPC   EAN/UPC/JAN Convert from EPC

     Barcode Type: GS1-128/ITF14 (GTIN-14)

☐ Tag Data   ☐ PC   ☑ EPC   ☐ TID

                  ☐ ASCII

(3) Clicking   Test   button.

(4) Taking the tag (EPC=3400013481E8498000000001) on the TS100/TS100A. The EPC data will be changed to *"FFFF013481E8498000000001" (it is a* deactivated tag*).*

    TS100/TS100A output the bar code data (01234565).

Deactivate Mode   Write Tag

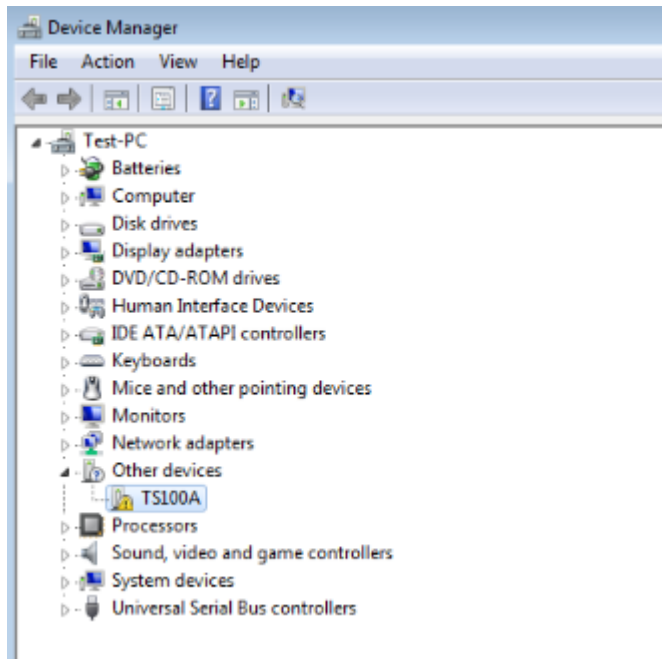Keyboard Data

01234565

Install CDC driver

When you set USB Type to Virtual COM, you could follow below steps to Install CDC driver.

[Win7]

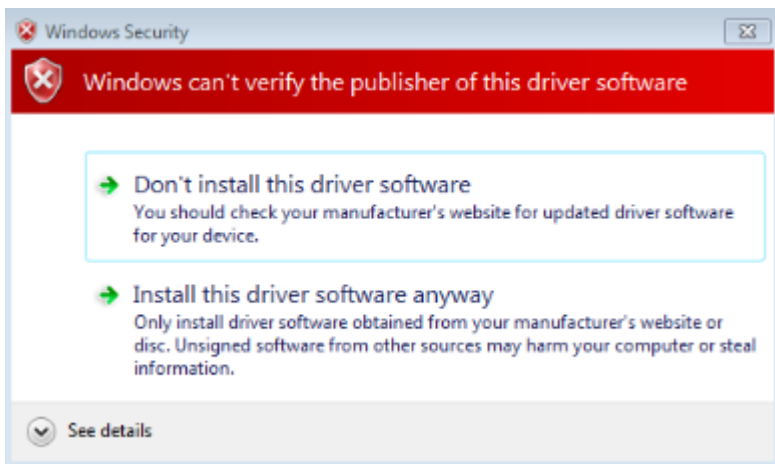1. Open [**Device Manager**] / [**Other devices**] / [**TS100A**]

2. Right click mouse on [**TS100A**], select [**Update driver Software...**] on the pop-up menu.
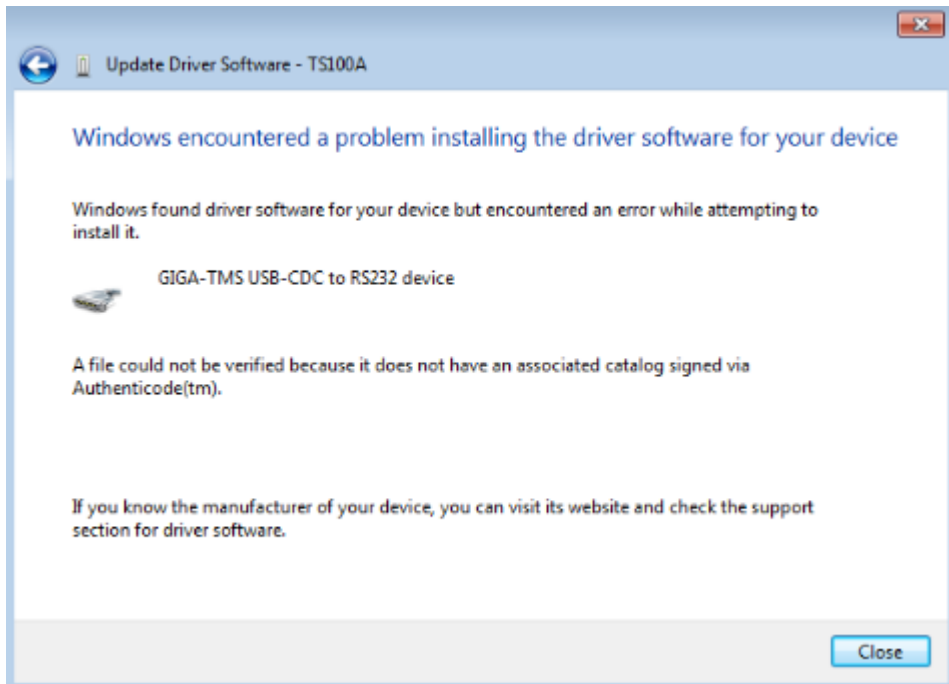
3. Select the directory which contains **GIGA-TMS_CDC.inf**.

  * Download & Unzip the file: http://ftp.gigatms.com.tw/public/disks/common/Driver/GIGA-TMS_CDC.zip

4. Click [**Install this driver software anyway**]

5. Wait for installation...

6. After installation, a device named [**GIGA-TNS USB-CDC to RS232 device**] under [**Ports (COM & LPT)**]

Update History

8Feb2021 release

- Version 1.1R8

  - Update Sensitivity description.

26Feb2020 release

- Version 1.1R7

- Update Explore the User Interface snapshot.

- Update Read Mode snapshot and description.

17Jan2020 release

- Version 1.1R6

- Add index of Install CDC driver.

25Dec2019 release

- Version 1.1R5

- Update Explore the User Interface snapshot according to TS100Utility v1.2.2

- Update Read Mode, Deactivate Mode, Reactivate Mode and Customized Read Mode snapshot and description.

- Update Write Tags, Deactivate/Reactivate Tags snapshot and description.

10Sep2019 release

- Version 1.1R4

- Update USB Type description.

- Add Tutorial: Install CDC driver.

2Jul2019 release

- Version 1.1R3

- Update Hardware Settings description.

- Update Output Settings description.

2Jul2019 release

- Version 1.1R2

- Add Tutorials: Deactivate/Reactivate Tags

- Update Deactivate Mode description.

- Update Reactivate Mode description.

- Update description of deactivate and reactivate mode in TS100/TS10A Features.

24Jun2019 release

- Version 1.1R1

- Update Explore the User Interface snapshot according to TS100Utility v1.1R5.

- Update Tag Analysis Mode description.

- Add Output Settings chapter.

- Update Advanced Settings description.

- Update Write Tags description.

09May2019 release

- Version 1.0R10

- Updated Explore the User Interface snapshot according to TS100Utility v1.1R1

- Update Hardware Settings snapshot.

  - Add USB Type description.

- Modify Advanced Settings snapshot.

  - Add Lock Settings description.

  - Update Output Interface description.

- Add Preferences Settings chapter.

- Add Tutorials chapter.

15Apr2019 release

- Version 1.0R9

- Updated Explore the User Interface snapshot according to TS100Utility v1.0R32

  - Add **Preferences** description.

- Updated Hardware Settings snapshot.

  - Updated **Wi-Fi Settings** description.

- Modify Advanced Settings snapshot.

  - Updated **Output** description.

- Add Preferences chapter.

18Mar2019 release

- Version 1.0R8

- Updated Dynamic Password description.

- Updated Verify description.

- Updated Keyboard Layout description.

28Jan2019 release

- Version 1.0R7

- Modify [Explore the User Interface](#) according to TS100Utility v1.0R27

07Nov2018 release

- Version 1.0R6

- Modify Disk Number.

02Nov2018 release

- Version 1.0R5

- Updated TS100/TS100A Features topic.

31OCT2018 release

- Version 1.0R4

- Updated TS100/TS100A Features topic.

31OCT2018 release

- Version 1.0R3

- Add chapters: TS100/TS100A Features, Test Functions, Write Tags.

- Update chapter: Using TS100Utility.

30OCT2018 release

- Version 1.0R2

- Add chapters: Introduction and System Requirements.

29OCT2018 release

- Version 1.0R1